KEY TO THE TAXA OF *HELENIUM* SECT. *ACTINEA*

1. Disc corollas with purple lobes; plants very rarely with all entire leaves, almost always at least a few leaves toothed, lobed, or pinnatifid. . . . . 1. *H. radiatum*
1. Disc corollas with yellow lobes; leaves almost always entire, rarely few-toothed.
   2. Leaves linear-rhombic, (1.1)3.5 – 6.5(10) mm wide; apex of inner involucral bracts rounded to obtuse to acute, but never cuspidate; pappus scales (5)6 – 7, obovate in outline with a notched apex, 2.7 – 3.5(4.1) mm long. . . . . 2a. *H. donianum* var. *donianum*
   2. Leaves linear, 0.9 – 2.0(2.5) mm wide; apex of inner involucral bracts acute to usually cuspidate; pappus scales 8 – 10, linear to linear-elliptic, not notched at the apex, 3.8 – 4.9 mm long. . . . . 2b. *H. donianum* var. *linearifolium*

1. HELENIUM **radiatum** (Less.) Bierner, comb. nov. BASIONYM: *Cephalophora radiata* Less. Linnaea 6:516. 1831. TYPE: URUGUAY. PROV. SORIANO or RIO NEGRO: "In Campis ad Rio Nigro," *Sellow s.n.* (LECTOTYPE: here designated the specimen labeled no. 1053 G-DC, microfiche TEX!). ≡ *Actinea radiata* (Less.) Kuntze, Rev. Gen. Pl. 1:303. 1891.

Actinea heterophylla Juss., Ann. Mus. Natl. Hist. Nat. [Paris] 2:423, t. 61, fig. 2. 1803. TYPE: URUGUAY. PROV. MONTEVIDEO: Montevideo, *Commerson herb. 98* (HOLOTYPE: P-JU, microfiche TEX!; ISOTYPE: P-JU, microfiche TEX!). ≡ *Actinella heterophylla* (Juss.) Pers., Syn. Pl. 2:469. 1807. ≡ [*Actinea alternifolia* Sprengel, Syst. Veg. 3:574. 1826, nom. superfl.] ≡ [*Actinea heterophylla* Juss. [var.] *dentata* Kuntze, Rev. Gen. Pl. 3(3): 128. 1898, nom. superfl.] ≡ [*Actinea heterophylla* Juss. f. *bicolor* Kuntze, Rev. Gen. Pl. 3(3):128. 1898, nom. superfl.] ≡ *Cephalophora heterophylla* (Juss.) Less., Syn. Gen. Compos. 240. 1832. ≡ *Helenium heterophyllum* (Juss.) Malme, Ark. Bot. 24(6):72. 1932, non DC., Prodr. 5:667. 1836. ≡ [*Helenium mattfeldianum* Herter, Revista Sudamer. Bot. 4:206. 1937, nom. superfl.] ≡ [*Helenium alternifolium* (Sprengel) Cabrera, Revista Mus. La Plata, Secc. Bot. 4:250. 1941.]

Plants 3 – 5 dm tall. Stems sparsely pubescent below becoming moderately pubescent above. Peduncles (2)10 – 15(20) cm long, ca 2 times as wide at the top as at the base. Leaves usually moderately pubescent, narrowly elliptic to oblanceolate, entire to usually toothed, lobed or pinnatifid; plants very rarely with all entire leaves, almost always at least a few toothed, lobed or pinnatifid leaves present. Heads 7 – 11 mm high, 11 – 15 mm wide (excluding rays). Receptacle 1.6 – 2.6 mm high, 2.2 – 3.5 mm wide. Involucral bracts in two series; the outer bracts 9 – 13, united at the base, lanceolate, moderately pubescent becoming densely pubescent at the base, (3.8)4.8 – 5.9(6.9) mm long, 1.0 – 1.4 mm wide; inner bracts 10 – 13, free, narrowly obovate to narrowly rhombic to narrowly obtrullate, 3.6 – 4.5 mm long, 1.0 – 1.4 mm wide, apex acute to acuminate. Ray florets 9 – 13; ligules 9.0 – 12.0 mm long,

3.2 – 4.2 mm wide, moderately to densely pubescent on the undersurface. Disc corollas 4.4 – 5.7 mm long, 1.0 – 1.5 mm wide, yellow with purple lobes. Achenes 1.5 – 2.5 mm long, 0.6 – 1.2 mm wide. Pappus scales 8 – 9, linear to usually linear-elliptic, (3.6)4.5 – 5.7 mm long including the awn, 0.5 – 0.9 mm wide, the awn 1.2 – 1.7 mm long. Chromosome number, $n = 34$. Flowering October to April, mainly November to February. Argentina from the southern part of Prov. Corrientes to the southern part of Prov. Buenos Aires; Uruguay.

Helenium radiatum is a well-defined species that is completely allopatric to the other taxa of *Helenium*. It is relatively widespread and there is some variability in leaf shape, but there is no geographic pattern to this variability.

Problems with identification of *Helenium radiatum* often involve *Gaillardia megapotamica* (Sprengel) Baker. Morphologic similarities of their stems, leaves, ligules, disc corollas, achenes, and pappus scales are quite striking. Only two megamorphic characters, both of which are generic characteristics, consistently separate these two taxa; *Gaillardia megapotamica* has teeth-like projections on the receptacle and tapering appendages at the end of each style branch, while *Helenium radiatum* has a naked receptacle and truncate style branches.

Only $n = 34$ has been reported for this taxon (Turner et al. 1979). One count is from a population located near Concordia in Prov. Entre Rios (*Sanderson 304*, TEX), which is near the northern limit of the distribution of this species, and the other two counts are from populations near Gonzalez Chavez (*Sanderson 353*, TEX) and Coronel Dorrego (inadvertently promoted to "Gral. Dorrego" on the collection label of *Sanderson 356*, TEX) in Prov. Buenos Aires, near the southern limit of distribution. The count for *Sanderson 353* is reported as $n = 34$, but, as mentioned in Sectional Relationships, the counts for the other two are reported as $n =$ ca 34, with the voucher label for *Sanderson 356* giving the count as $n = 34II + 3I$. I believe it is significant that these counts, especially the unclear ones, are from populations separated by about 800 km. This suggests to me that polyploidy is widespread in *Helenium radiatum* and that it is probably autotetraploidy of relatively recent origin. I think it is likely, therefore, that some "ancestral" populations with $n = 17$ may still be extant and that they simply have not yet been collected and counted. It could be argued, however, that *H. radiatum* developed from tetraploid populations of *H. donianum* var. *donianum*; the latter has been reported to be dibasic with $n = 17$ and 34 (Turner et al. 1979). I think this is unlikely because the morphologic differences between the two taxa are considerable, which suggests to me that they separated at the diploid level a rather long time ago.

Chemical data also indicate that *Helenium radiatum* is a well-defined taxon. The flavonoid chemistry of *H. radiatum* is very similar to that of *H. donianum* var. *donianum* in a general sense, but it also is consistently different (Table II), and sesquiterpene lactone chemistry indicates a distinct difference between these two taxa (Herz et al. 1968; Zdero et al. 1986). Herz et al. examined three collections of *Helenium* from Argentina identified as *H. alternifolium*, an illegitimate name for *H. radiatum*. Two of their collections, however, were from near Los Puestos in Prov. Tucuman, and these plants could only be *H. donianum* var. *donianum* because this is the only taxon of *Helenium* that grows in that area. From both collections, they isolated tenulin, brevilin A, and linifolin A. Independently, Zdero et al. (1986) isolated tenulin and linifolin A, among other compounds, from one collection of *H. donianum* var. *donianum*. The other collection that Herz et al. examined was from the vicinity of La Plata in Prov. Buenos Aires, and could only be *H. radiatum*. From this collection, they isolated a new compound, alternilin; they were not able to detect any of the compounds isolated from the collections of *H. donianum* var. *donianum*.

The biology of this taxon is clearer than the nomenclature. For many years, the name *Helenium alternifolium* (Sprengel) Cabrera was used for this taxon. When Sprengel (1826) published the name *Actinea alternifolia*, however, he cited *Actinea heterophylla* as a synonym. Since there was no problem with the latter name at the time Sprengel published his substitute, the name *Actinea alternifolia* was nomenclaturally superfluous when published and, therefore, illegitimate (Article 63.1, International Code of Botanical Nomenclature, Sydney edition 1983). According to the code, only legitimate names (except homonyms) are taken into consideration for purposes of priority (Article 45.3), and a name that was illegitimate when published cannot become legitimate later unless it is conserved (Article 6.4).

Another nomenclatural problem involves the following excerpt from Kuntze (1898):

"*A. heterophylla* Juss. (*Cephalophora h.* Less., *Actinella h.* Pers., *Helenium sp.* O. Hoffm. in Engl. Pfl. - Fam.) ∝ *dentata* O. Ktze. Folia plurima dentibus paucis (2−4) magnis f. *bicolor* O. Ktze. Flores radii sulfurei albescentes, flores disci fusco-rubri. Argentina: Buenos Aires.

"β *latifolia* O. Ktze. Folia anguste lanceolata superne latiora - 4 mm lata, integerrima. Patagonia (Moreno & Tonini). Hierzu *A. radiata* Less. p. p.

"γ *linearifolia* O. Ktze. Folia linearia ± 1 mm lata integerrima. f. *concolor* O. Ktze. Flores omnes flavi. Argentina: Córdoba."

It is my opinion that Kuntze actually intended to describe only two new taxa: *Actinea heterophylla* [var.] *latifolia* and *A. heterophylla* [var.] *linearifolia*.

I believe that he named [var.] *dentata* and forma *bicolor* in the first paragraph to serve merely as the epithets at the ranks of variety and form for "typical" *Actinea heterophylla* (= *Helenium radiatum*), and thus as a means for differentiating his new taxa from it. This seems logical to me because *Helenium radiatum* typically has few-toothed leaves, yellow ligules, and purple-lobed disc corollas, and was described and illustrated as such by Jussieu (1803). In fact, I have examined three specimens (two at NY and one at US) collected by Kuntze 11 Dec 1891 in Buenos Aires that are annotated by him as "*Actinea heterophylla* Juss. var. *dentata* OK. f. *bicolor* OK.", and they are completely characteristic of *Helenium radiatum* as recognized in the present treatment. Furthermore, for Revisio Generum Plantarum vol. 3 part 2, Kuntze based his nomenclature on the Codex Nomenclaturae Botanicae Emendatus (Rev. Gen. Pl. 3(1):CCCLXXXV – CCCCXVI. 1893.) as emended in the Supplementum (Rev. Gen. Pl. 3(2):162 – 167. 1898). Article 32 states that a "...specific name ought, in general, to indicate something of the appearance, the characters, the origin, the history, or the properties of the species..." and Article 38 goes on to say, "Names of subspecies and varieties and mutations are formed in the same way as specific names, and are added to them according to relative value, beginning by those of the highest rank." I am certain that Kuntze followed these rules and used descriptive terms that were typical of the taxon at the ranks of variety and form rather than autonyms. By using descriptive epithets at these ranks for the typical taxon, he could use contrasting epithets for his new taxa. I have, therefore, treated *Actinea heterophylla* Juss. [var.] *dentata* Kuntze and *A. heterophylla* Juss. f. *bicolor* Kuntze as superfluous, illegitimate names.

In the second paragraph, [var.] *latifolia* is described as having absolutely entire leaves, which contrasts it with [var.] *dentata*. He does not use the rank of form because the type specimen (*Moreno & Tonini*, NY!) has yellow ligules and purple-lobed disc corollas and, therefore, is not different from the typical taxon at that rank. As it turns out, the type of *Actinea heterophylla* [var.] *latifolia* is actually a specimen of *Gaillardia megapotamica* (see excluded taxa).

In the third paragraph, the epithet *linearifolia* contrasts with *latifolia*, and the leaves are described as absolutely entire, which contrasts with typical [var.] *dentata*. In this case, Kuntze uses the rank of forma (f. *concolor*) because the plant has "flowers all yellow," which contrasts it with f. *bicolor*. It is my opinion that Kuntze was describing only one new taxon, and that again he followed his own rules and used a descriptive name, *concolor*, rather than an autonym as the epithet at the rank of forma for "typical" *A. heterophylla* [var.] *linearifolia*. The only relevant specimen that I could find

(collected by Kuntze in Dec 1891 in Córdoba and annotated by him simply as "*Actinea heterophylla* Juss. var. *linearifolia* OK.") has completely yellow ray and disc flowers. I have, therefore, treated the name *Actinea heterophylla* Juss. f. *concolor* Kuntze as superfluous and illegitimate. I agree with Kuntze that his *Actinea heterophylla* [var.] *linearifolia* is a valid taxon, but I have treated it as a variety of *Helenium donianum* rather than as a variety of *H. radiatum*.

Specimens examined: ARGENTINA: **Prov. Buenos Aires**: Buenos Aires, 11 Dec 1891, *Kuntze s.n.* (NY, US); roadside near arroyo W of Gral. [Coronel] Dorrego on rt N 3, 10 Dec 1971, *Sanderson 356* (TEX); 5 km W of Gonzales-Chavez on rt N 3, 10 Dec 1971, *Sanderson 353* (TEX); Cerro La Peregrina, 20 km N of Mar del Plata, 11 Dec 1938, *Eyerdam, Beetle & Grondona 23683* (MO)*; Sierras Pampeanas, Sierra Currumalan, Feb-Apr 1881, *Lorentz s.n.* (CORD, US); Sierra Chica, 18 Dec 1944, *Huidobro 1497* (TEX); La Ventana Mountain, Sierra de la Ventana, 13 Dec 1971, *Sanderson 363* (TEX); along Arroyo Sauce, Sierra de la Ventana, 21 Apr 1943, *Bartlett 20034* (NY); Sierra de la Ventana, 25 Nov 1944, *Huidobro 1357* (NY); Sierra de la Ventana, 27 Nov 1962, *Tell s.n.* (NY); Partido de Tornquist, Sierra de la Ventana, 22 Apr 1939, *Cabrera 5170* (US, MO); Sierra de la Ventana, Cerro Ventana, 22 Feb 1940, *Kuhnmann 24* (BA); Sierra Ventana, 1920, *Molfino s.n.* (BA); Partido Saavedra, Sierra de Curamalal, 3 Jan 1884, *Holmberg 2150* (CORD); Saldungaray, 1 Dec 1944, *Huidobro 1403* (NY); Canifrana [?], 5 Dec 1926, *Castellanos 26/1932* (BA); Partido de Olavarría, Sierras de Olavarría, Sierras Bayas, 29 Jan 1951, *Abbiatti 4026 & 4051* (US); Cerros y Laguna de Puan, 10 Nov 1928, *Scala s.n.* (US); Tandil, 2 Mar 1946, *Krapovickas 2925* (MO, US); Tandil, Las Nogales, 21 Nov 1937, *Pastore 1138* (NY); Sierra del Tandil, 12 Nov 1925, *Hosseus 222* (CORD); Sierra del Tandil, Jan 1917, *Agusti 24630* (BA); Partido Tandil, Cerro "El Sombrerito," 22 Jan 1945, *Huidobro 1768* (NY). **Prov. Corrientes**: Dept. Curuzú Cuatía, rt 14 ca km 625, 13 Dec 1957, *Pedersen 4702* US, NY). **Prov. Entre Rios**: at km 410, S of Concordia on rt N 14, 16 Oct 1971, *Sanderson 304* (TEX). URUGUAY. **Prov. Canelones**: Rio Sta. Lucia, pueblo Sta. Lucia, 21 Nov 1935, *Rosengurtt B-1374* (NY). Prov. Cerro Largo: Cerro Largo, Cerro de las Cuentas, 23 Feb 1938, *Rosengurtt B-2567* (NY). **Prov. Montevideo**: Dept. de Montevideo, Miguelete, 20 Feb 1928, *Herter 789B* (MO, NY); Carrasco, 24 Nov 1912, *Osten 6397* (US); Montevideo, Parque Lecoq, 24 Dec 1964 (US). **Prov. Rio Negro**: Dept. Rio Negro, Fray Bentos, Nov 1933, *Herter 789c* (MO). **Prov. Soriano**: Soriano, Nov 1939, *Jackson & Manzón-Heber PE-4372* (MO)*; Dept. de Soriano, km 54 between Mercedes and Cerro Verra on rt 14, 19 Jan 1977, *Irving & Irving U-24 A&B* (LL).

2. HELENIUM DONIANUM (Hook. & Arn.) Cabrera, Notas Prelim. Mus. La Plata 9:254. 1944. BASIONYM: *Cephalophora doniana* Hook. & Arn., J. Bot. (Hooker) 3:324. 1841. TYPE: ARGENTINA. PROV. MENDOZA: Mendoza, *Gillies 64* (LECTOTYPE: here designated K!). ≡ *Gaillardia doniana* (Hook. & Arn.) Grisebach, Pl. Lorenz. 140. 1874. ≡ *Actinea doniana* (Hook. & Arn.) Kuntze, Rev. Gen. Pl. 1:303. 1891.

Plants 3 – 8 dm tall. Stems glabrous to sparsely pubescent below becoming moderately pubescent above. Peduncles 7 – 20 cm long, ca 1.5 times as wide at the top as at the base. Leaves sparsely to usually moderately pubescent, linear to linear-rhombic, almost always entire, but rarely few-

toothed. Heads 10 – 13 mm high, 11 – 16 mm wide (excluding rays). Receptacle 1.5 – 2.5(3.4) mm high, (1.7)2.3 – 3.5(4.0) mm wide. Involucral bracts erect to spreading to reflexed at anthesis, in two morphologic series; the outer bracts ca 13, free or slightly united at the base, linear-lanceolate to lanceolate, moderately to densely pubescent, 4.8 – 7.2 mm long, 0.7 – 1.7 mm wide; inner bracts ca 13, often with another row of ca 13 more bracts essentially like the other inner bracts, but usually narrower, 4.0 – 4.5 mm long, 0.7 – 1.6 mm wide, from obovate to narrowly spatulate to narrowly rhombic to narrowly obtrullate, apex rounded to obtuse to acute to cuspidate. Ray florets ca 13; ligules 7.8 – 12.7 mm long, 2.5 – 5.5 mm wide, sparsely to moderately pubescent on the undersurface. Disc corollas 3.3 – 5.0 mm long, 1.0 – 1.5 mm wide, yellow with yellow lobes. Achenes 1.5 – 2.5 mm long, 0.8 – 1.0 mm wide. Pappus scales 5 – 10, linear to linear-elliptic, or obovate in outline with a notched apex, 2.7 – 4.9 mm long including the awn, 0.7 – 1.4 mm wide, the awn 1.2 – 2.2 mm long.

Helenium donianum is quite distinct from *H. radiatum* in morphology, flavonoid chemistry (Table II), and sesquiterpene lactone chemistry (see discussion under *H. radiatum*). In addition, there is good evidence for the recognition of two varieties within *H. donianum*.

Helenium donianum var. *donianum* is found mainly in the foothills of the Andes, although several specimens have been collected from the Sierras de Córdoba and the Sierras de San Luis. *Helenium donianum* var. *linearifolium* is found exclusively in Prov. Córdoba in or near the Sierras de Córdoba. The ranges of the two varieties overlap in Prov. Córdoba, but I do not know whether the taxa actually grow in the same habitat. The specimens that I have examined do not exhibit intergradation and there are no problems with identification. The leaves of var. *linearifolium* are usually distinctly narrower than those of var. *donianum*, but this distinction is not absolute. Morphologically, the pappus scales and inner involucral bracts are consistently different in the two varieties. I have recognized these taxa as varieties rather than species because the morphologic differences between them are not as great as those between *H. donianum* and *H. radiatum*.

Some systematists would argue that two taxa should be recognized within var. *donianum* because it exhibits chromosome numbers of $n = 17$ and 34 (Turner et al. 1979). It is my opinion that the evidence is insufficient to warrant such taxonomic treatment since I am unable to distinguish the $n = 17$ from the $n = 34$ plants on the basis of morphology. In addition, one count of $n = 17$ (*Turner 9203*, LL) and one of $n = 34$ (*Sanderson 374*, TEX) are from plants collected at the same locality, Cuesta de la Chilca in Prov. Catamarca.

Nomenclatural problems involved with *H. donianum* var. *linearifolium* are discussed under *H. radiatum*. The collections that I have examined, including one of my own (*Bierner 51512*, TENN), are referable to the specimen collected by Kuntze in Córdoba in 1891 (NY) and annotated by him as *Actinea heterophylla* var. *linearifolia*.

2a. HELENIUM DONIANUM (Hook. & Arn.) Cabrera var. DONIANUM

Leaves linear-rhombic, midstem leaves (3)5 − 8 cm long, (1.1)3.5 − 6.5(10.0) mm wide. Involucral bracts in two series; the outer bracts 12 − 15, 4.3 − 6.4 mm long, 0.7 − 1.4 mm wide, lanceolate to usually linear-lanceolate, apex acute to rarely acuminate; inner bracts in one or two rows with ca 13 bracts in each row, the inner row, when present, essentially like the other inner bracts, but usually narrower, 4.0 − 4.5 mm long, 0.8 − 1.2 mm wide, from narrowly obovate to narrowly obtrullate, apex rounded to obtuse to acute, but never cuspidate. Ligules 8.3 − 12.7 mm long, 2.5 − 5.5 mm wide. Pappus scales (5)6 − 7, obovate in outline with a notched apex, 2.7 − 3.5(4.1) mm long including the awn, 0.7 − 1.4 mm wide, the awn 1.2 − 1.9(2.3) mm long. Chromosome number, $n = 17, 34$. Flowering September to April, mainly December to March. Argentina from Prov. Salta to the northern part of Prov. Mendoza in the foothills of the Cordillera de Los Andes, and from the northern part of Prov. Córdoba to the northern part of Prov. San Luis in the Sierras de Córdoba and the Sierras de San Luis.

Specimens examined: ARGENTINA. **Prov. Catamarca**: Cuesta de la Chilca, NE of Andalgalá, Feb 1974, *Turner 9203* (LL); top of Cuesta de la Chilca on rt N 62, E of Andalgalá, 17 Dec 1971, *Sanderson 374* (TEX); Dept. Capital, Las Carreras [Barreras?], 23 Apr 1928, *Venturi 6269* (US); Dept. Andalgalá, Común El Sancho [Funda?], 20 Dec 1896, *Jorgensen 1663* (MO, US); Rió de las Granadillas, cerca Belen, Dec 1879, *Schickendantz 46* (CORD); Quebrada del Carrizal, Feb 1876, *Schickendantz 248* (CORD); Loma Cruzada (S Ambato), Feb 1941, *Parodi 14292* (US); Agua Negra, 9 Feb 1930, *Castellanos 30/681* (BA); Quebrada de La Sevila, ca 10 km SE of jct of rt 1 and rt 60 along rt 60, 10 Feb 1973, *Dillon & Rodriguez 526* (LL); Dept. Tinagasta, Cuesta de Zapata, 2 Mar 1967, *Cabrera et al. 18109* (TEX). **Prov. Córdoba**: Capilla del Monte, 28 Jan 1922, *Castellanos 24625* (BA); Dept. Punilla, Capilla del Monte, 1894, *Doering 8253* (CORD); Dept. Cruz del Eje, Cruz del Eje, Ojo de Agua, 29 Jan 1885, *Kurtz 247 & 254* (CORD); Gutemberg (km 288, Ferrocarril Central de Argentina), 24 Mar 1943, *Bartlett 19807* (US). **Prov La Riója**: km 1133 on rt 60, 90 km N & W of La Riója, 31 Dec 1974, *Bacon & Bohnstedt 1529* (LL); Velazco, Puerto Viejo, Jan 1934, *Yepes {?} 18890* (BA); Dept. Gral. Sarmiento, Punta de Agua, Precordillera, 31 Jan 1947, *Hunziker 2084* (BA); Dept. Famatina, Las Gredas, 26 Feb 1965, *Cabrera et al. 16702* (TEX); Dept. Famatina, La Mariposa, Sierra Famatina, 31 Jan 1906, *Kurtz 13386* (CORD); Dept. Famatina, Sierra Famatina, La Vega de La Hoyada, 22 Jan 1908, *Jimenez 15198* (CORD); Dept. Famatina, Mina San Juan, 2 Mar 1906, *Kurtz 13672* (CORD); Dept. Gral. Lavalle, Sierra de Sañogasta entre Guálo y Puesto Talampayo, 27 Jan 1906, *Kurtz 13294* (CORD); Dept. Sanagasta, Sierra Velasco, Cuesta de La Casa de

Piedra, 28 Feb 1908, *Kurtz 15458* (CORD); Las Cortaderas entre el Peñon y el Faguel [?], Cordillera de la Riója, 22 Feb 1879, *Hieronymus & Niederlein 203* (CORD). **Prov. Mendoza**: Dept. Las Heras, Las Chilcas, 17 Jan 1897, *Kurtz 9294* (CORD); Dept. San Carlos, 30 leguas al sur de Mendoza, 19 – 27 Feb 1885, *Loos 2377* (CORD); Villavicencio, N of Mendoza, 5 Jan 1936, *Mexia 4399* (MO, US). **Prov. Salta**: Dept. Rosario de la Frontera, ca 6 km SW of Rosario de la Frontera on hwy 55, 15 Jan 1975, *Bacon & Bohnstedt 1628* (LL); Dept. La Candelaria, Menguillo [Unguillo?], Sierra Colorada, Jan 1933, *Schreiter 9412* (US)*; Dept. Capital, Salta, 5 Mar 1958, *Cabrera & Marchionni 12.807* (US)*. **Prov. San Juan**: Dept. Calingasta, Llanos de Leoncito del Norte, Mina El Molle, 28 Jan 1950, *Castellanos 15.333* (US); Dept. Iglesia, Gds. [?] del Molle, al N de Malimán, NE del Colanguil, 27 Feb 1950, *Perrone 55.249* (BA); Bajada de la Cuesta Vieja, 28 Feb 1921, *Hosseus 2594* (CORD); Valle del Rió de Los Chupadores, 28 Feb 1921, *Hosseus 2538* (CORD). **Prov. San Luis**: Dept. Junín, Bajo de los Velez [?], 19 Feb 1942, *Maldonado 1284* (US)*. **Prov. Tucumán**: Dept. Burroyacu, El Puestito, 20 Sep 1928, *Venturi 7327* (MO, US)*; Dept. Capital, Rió Talí [?], 19 Nov 1920, *Venturi 1050* (US)*; Dept. Cruz Alta, Estación Aráoz, 21 Nov 1925, *Schreiter 3993* (US); Dept. Cruz Alta, Canipe [Campo?] Alegre, km 754 E.C.C.N., 29 Oct. 1922, *Venturi 1999* (US); Tapia, 23 Nov. 1920, *Venturi 1070* (US)*; Trancas, 14 Dec 1912, *Rodriguez 1189* (NY); Tucumán, Oct. 1892, *Kuntze s.n.* (NY, US).

2b. Helenium donianum (Hook. & Arn.) Cabrera var. **linearifolium** (O. Kuntze) Bierner, comb. nov. Basionym: *Actinea heterophylla* Juss. [var.] *linearifolia* Kuntze, Rev. Gen. Pl. 3(3):128. 1898. Type: ARGENTINA. Prov. Córdoba: Córdoba, Dec 1891, *Kuntze s.n.* (lectotype: here designated NY!). ≡ [*Actinea heterophylla* Juss. f. *concolor* Kuntze, Rev. Gen. Pl. 3(3):128. 1898, nom. superfl.]

Leaves linear, midstem leaves 2 – 5(6) cm long, 0.9 – 2.0(2.5) mm wide. Involucral bracts in two series; the outer bracts usually 13, lanceolate, acuminate, 5.0 – 7.2 mm long, 1.4 – 1.7 mm wide; inner bracts usually 13, obovate to narrowly obovate, acute to usually cuspidate, 4.1 – 4.4 mm long, 0.7 – 1.6 mm wide. Ligules 7.8 – 10.0 mm long, 2.9 – 4.0 mm wide. Pappus scales 8 – 10, linear to linear-elliptic, the body not notched at the apex, 3.8 – 4.9 mm long including the awn, 0.7 – 1.0 mm wide, the awn 1.7 – 2.2 mm long. Flowering November to February. Argentina, Prov. Córdoba in the Sierras de Córdoba and nearby lower elevations.

Specimens examined: ARGENTINA. **Prov. Córdoba**: Córdoba, Dec 1891, *Kuntze s.n.* (NY); Córdoba, 23 Dec 1975, *Bierner 51512* (TENN); Córdoba, 19 Nov 1880, *Galander s.n.* (CORD); San Javier, 30 Nov 1927, *Castellano 11830* (BA); Dept. Santa María, La Isla, 11 Dec 1950, *A. de la Sota 3106* (US); cerca del Matadero, Sierra Achala de Córdoba, 2 Dec 1878, *Hieronymus s.n.* (CORD); Dept. Punilla, entre Durazno y Cerro Blanco (arriba de Tanticuchi), 18 – 20 Feb 1911, *Flossdorf 15965* (CORD).

SYNONYMY FOR EXCLUDED NAMES AND TAXA (SOUTH AMERICA)

HYMENOXYS ANTHEMOIDES (Juss.) Cass., Dict. Sci. Nat. 55:278. 1828.

BASIONYM: *Hymenopappus anthemoides* Juss., Ann. Mus. Natl. Hist. Nat. [Paris] 2:426. 1803. TYPE: ARGENTINA. PROV. BUENOS AIRES: Buenos Aires, 1767, *Commerson s.n.* (HOLOTYPE: P-JU; ISOTYPE: P-JU). See Parker (1962). ≡ *Actinella anthemoides* (Juss.) A. Gray, Proc. Amer. Acad. Arts 13:373. 1878. ≡ *Actinea anthemodes* (Juss.) Kuntze, Rev. Gen. Pl. 3(3):128. 1898. Orthographic variant. ≡ *Actinella anthemidoides* (Juss.) Malme, Ark. Bot. 24(6):73. 1932. Orthographic variant. ≡ [*Actinella anthemoides* (Cass.) Herter, Revista Sudamer. Bot. 4:206. 1937, nom. superfl.]

Actinea haenkeana (DC.) Kuntze, Rev. Gen. Pl. 3(3):128. 1898. BASIONYM: *Hymenoxys haenkeana* DC., Prodr. 5:661. 1836. TYPE: PERU. 1790, *Haenke s.n.* (HOLOTYPE: G-DC; ISOTYPE: P). Parker (1962) believes that these plants were actually collected in Argentina.

HYMENOXYS TWEEDIEI Hook. & Arn., J. Bot. (Hooker) 3:323. 1841.

TYPE: BRAZIL. "Rio Grande, and dry pastures, roadsides of Los Loamos, N. Patagonia," *Tweedie 859* (HOLOTYPE: K). See Parker (1962). ≡ *Actinea tweedii* (Hook. & Arn.) Kuntze, Rev. Gen. Pl. 3(3):128. 1898. Orthographic variant. ≡ *Actinella tweediei* (Hook. & Arn.) Malme, Ark. Bot. 24(6):73. 1932.

GAILLARDIA MEGAPOTAMICA (Sprengel) Baker in Mart., Fl. Bras. 6(3):276. 1884. BASIONYM: *Guntheria megapotamica* Sprengel, Syst. Veg. 3:449. 1826. TYPE: BRAZIL. "Rio grande," Sello[w] (HOLOTYPE: P).

Actinea heterophylla Juss. [var.] *latifolia* Kuntze, Rev. Gen. Pl. 3(3):128. 1898. TYPE: ARGENTINA. Patagonia, *Moreno & Tonini s.n.* (NY!).

BLAINVILLEA BAHIENSIS (DC.) Baker in Mart., Fl. Bras. 6(3):177. 1884.

BASIONYM: *Oligogyne bahiensis* DC., Prodr. 5:629. 1836. TYPE: BRAZIL. "circa Bahiam Brasiliae," *Blanchet 1706* (HOLOTYPE: G-DC).

Galophthalmum brasiliense Nees et Mart., Nova Acta Leop. 12:8, t. 2. 1824. Type not seen; taxonomic synonym of *Blainvillea bahiensis* according to Gray Index. ≡ [*Actinea oppositifolia* Sprengel, Syst. Veg. 3:574. 1826, nom. superfl.]

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I thank the curators of the following herbaria from which specimens were borrowed for the present study: BA, CORD, K, LL, MO, NY, P, TEX, and US. This work was supported by NSF grant DEB74-17454 while I was a faculty member of the Department of Botany, University of Tennessee, Knoxville, TN 37916; additional work on this paper was done at the Southern Methodist University Herbarium, Dallas, TX 75275. I thank Wm. F. Mahler, Barney L. Lipscomb, John L. Strother, and Guy Nesom for their kind help.

APPENDIX

Voucher specimens for sect. *Actinea* are indicated by asterisks in the lists of specimens examined. The following voucher specimens for sect. *Cephalophora* are deposited in the University of Tennessee Herbarium (TENN), and all collection numbers are those of M. W. Bierner. *Helenium aromaticum*—CHILE. Aconcagua: 27.0 km S of the Aconcagua—Coquimbo Prov. line on hwy 5, *51452*. Coquimbo: 13.7 km N of the Coquimbo—Aconcagua Prov. line on hwy 5, *51454;* 16.6 and 6.5 km S of turnoff to Cta. Huentelauquen on hwy 5, *51455 and 51456;* 57.3 km S. of Ba. El Teniente on hwy 5, *51459;* 2.0 km S of turnoff to Comunidad Herradura on hwy 5, *51464;* Just S of Guayacan and Coquimbo at km 453.4 on hwy 5, *51469;* Dirt rd 0.6 km E of Las Rojas in the Elqui Valley E of La Serana, *51472*. Valpariso: 8.8 km W of hwy 5 on rd from Nogales to Puchuncavi, *51451*. *Helenium atacamense*—CHILE. Atacama: S of Vallenar on hwy 5 at km 649.6, 656.5, and 653.3, *51489, 51493 and 51494;* N of Vallenar on hwy 5 at km 673.3 and 673.6, *51490 and 51492*. *Helenium urmenetae* var. *leguiffei*—CHILE. Coquimbo: Dirt rd 2.5, 3.4, and 4.2 km W of Las Rojas in the Elqui Valley E of La Serana, *51476, 51478 and 51479;* Hwy 5, 8.5 km S, 0.4 km N, and 25.0 km N of the entrance to El Tofo mine, *51482, 51484 and 51485*. *Helenium vallenariense*—CHILE. Atacama: hwy 5, 32.6 and 50.3 km N of the Atacama—Coquimbo Prov. line at km 620.9 and 638.7, *51488 and 51495*. Coquimbo: Hwy 5, 3.4 and 0.9 km S of the Coquimbo—Atacama Prov. line, *51486 and 51487*.

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A NEW *VITIS* (VITACEAE) FROM VERACRUZ, MÉXICO

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ABSTRACT

Vitis **nesbittiana**, a new species in series *Aestivales* Planchon (Vitaceae), is described and compared with two morphologically similar members of *Aestivales*. *Vitis* **nesbittiana** is restricted to tropical cloud forests around Jalapa, México at elevations from 1700 – 2120 m.

A new species of grapes with conspicuously glaucous abaxial leaf surfaces was found growing on hillsides in tropical cloud forests near Jalapa, Veracruz, México. This species belongs in series *Aestivales* Planchon (Vitaceae), a series formerly restricted to the United States east of the Rocky Mountains. Series *Aestivales* is unique in the occurrence of glaucescent to glaucous abaxial leaf surfaces and reddish – brown wood on one year old stems, which also may be glaucous, especially around nodes. This series formerly consisted of a single species, *V. aestivalis* Michx., which occurs as regional variants that have non – overlapping distributions, freely intergrade, occupy relatively xeric, often sandy sites, and flower before sympatric members of series *Cinerascentes*. *Vitis aestivalis* consists of five subspecific taxa: var. *aestivalis* (including *V. gigas* Fennell and *V. rufotomentosa* Small), var. *argentifolia* (Munson) Fernald, var. *glauca* Bailey (= *V. lincecumii* var. *glauca* Munson), var. *lincecumii* (Buckley) Munson, and var. *smalliana* (Bailey) Comeaux.

This species is dedicated to the memory of Dr. William B. Nesbitt (1932 – 1983), former grape breeder at North Carolina State University. Dr. Nesbitt developed numerous cultivars of grapes and served as chairman of the author's advisory committee for the doctorate degree during the research period.

VITIS **nesbittiana** Comeaux, sp. nov. Fig. 1, 2.

Caules angulatescens teres, canus ad bruno, striae obscuri ad basim; folia magni, saepe trilobi, laterilobis acutatis ad acuminatis et divergentibus, *lobus terminalis acuminatus, basibus cordata ad fere truncata*, abaxialis pagina glauca, glabrata ad obscura puberula; baccae niger, glaucae, 7 – 15 mm diam.; semina 3.5 – 7 mm longa, 3 – 5 mm lata, rostro brevi, *dorsalis pagina saepe ferens 2 – 6 sulcati perpendiculares ad verticalis axis*.

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SIDA 12(2):273 – 277. 1987.

Large vine to 20 m. Stems on current season growth glabrous to flocculent, occasionally glaucescent; branchlets angled becoming terete and obscurely striate, internodes 3 – 12 cm long, nodes not encircled with red pigmentation, pith interrupted at nodes by a diaphram 2 – 3 mm thick; one year old stems extremely flexible; bark gray to brown (not reddish brown) and shredding on one year old stems, lenticels absent; growing tips glabrescent and red to pubescent with tan to rufescent trichomes, not enveloped by young leaves; bud scales glabrous to puberulent, 3 – 5 mm long, brown. Leaves cordiform to nearly deltoid, rugose to flat, apex acuminate to nearly acute, base cordate to nearly truncate, margins almost entire to serrate, with teeth 0.1 to 7 mm long, oriented perpendicular to margin or towards apex, convex or triangular, occasionally ciliate, with veins extending beyond teeth or margin, lateral lobes acute to acuminate, then divergent, lateral sinuses mostly acute; lamina with glabrous adaxial surfaces on mature leaves, abaxial surfaces distinctly glaucous, usually glabrous or sometimes puberulent on mature leaves, with or without tufts of trichomes in axils of major veins, 9 – 20 cm wide, 13 – 25 cm long, petioles glabrous to floccose, 5 – 13 cm long; stipules brown, pubescent, 1 – 1.5 mm long, 1 – 1.5 mm wide, caducous; pubescence white, tan or rufescent, consisting of straight, pointed, simple trichomes or arachnose trichomes. Tendrils and inflorescences absent every third node, tendrils bifurcate or trifurcate, to 17.5 cm long. Inflorescences 2 – 9.5 cm long, peduncles 1.5 – 3.2 cm long, shoulder 1 – 5 cm long, occasionally replaced by a tendril. Flowers not observed. Fruit a berry, black, glaucous, without lenticels, subovate to spherical, 0.7 – 1.5 cm in diameter, with a pleasant vinous flavor when fully ripened; skin thin; pulp clear, greenish to purplish, melting; juice clear to purplish. Seeds tan to brown, irregular in shape, ovate to nearly pyriform, 3.5 – 6 mm long, 3 – 4.5 mm wide, generally with 2 – 6 shallow grooves on the dorsal surface arranged perpendicular to the vertical axis.

TYPE: MÉXICO. 18 km W jct Hwy 140 and Ave. Americans in Jalapa, 2110 m elev., 8 Sep 1986, *Comeaux 4138* (HOLOTYPE: SMU; ISOTYPES: MEXU, PH)

PARATYPES: MEXICO. VERACRUZ: 20.5 km W jct Hwy 140 and Ave. Americans in Jalapa, 2120 m elev., 23 Jun 1986, *Comeaux 4134* (SMU); 20 km l.c., 23 Jun 1986, *Comeaux 4135* (SMU); 19.5 km l.c., Jun 1986, *Comeaux 4136* (SMU); 18 km l.c., 23 Jun 1986, *Comeaux 4137* (SMU); 15 km l.c., 23 Jun 1986, *Comeaux 4139* (SMU); 12 km SW of La Reforma, 1760 m elev., 23 Jun 1986, *Comeaux 4169* (SMU); 18 km l.c., 23 Jun 1986, *Comeaux 4171* (SMU); 45.6 km l.c., 2030 m elev., 23 Jun 1986, *Comeaux 4172* (SMU).

Field studies revealed *V. nesbittiana* to be endemic to a restricted area including Jalapa, Veracruz north 20 km and west 20 km. Terrain is mountainous, 1700 to 2120 m elevation, and within cloud forests. *Vitis*

nesbittiana was not found in similar cloud forests north of Jalapa near Cuidad Valles or south of Jalapa at Huatusco. Associated species of *Vitis* included *V. popenoii* Fennell and *V. tiliifolia* Humb. & Bonpl. ex Roem. & Schult.

The glaucous, mostly glabrous abaxial leaf surfaces of *V. nesbittiana* are suggestive of *V. aestivalis* var. *argentifolia* (Munson) Fernald and *V. aestivalis* var. *glauca* Bailey. Leaves of *V. nesbittiana* generally are more acuminate and have broader basal sinuses, occasionally appearing nearly truncate. One year old stems of *V. nesbittiana* vary from gray to brown, and lack the reddish – brown appearance that is characteristic of series *Aestivales* in the United States. Also, the one year old stems of *V. nesbittiana* are unique in being flexible, unlike the relatively brittle wood of other *Aestivales*.

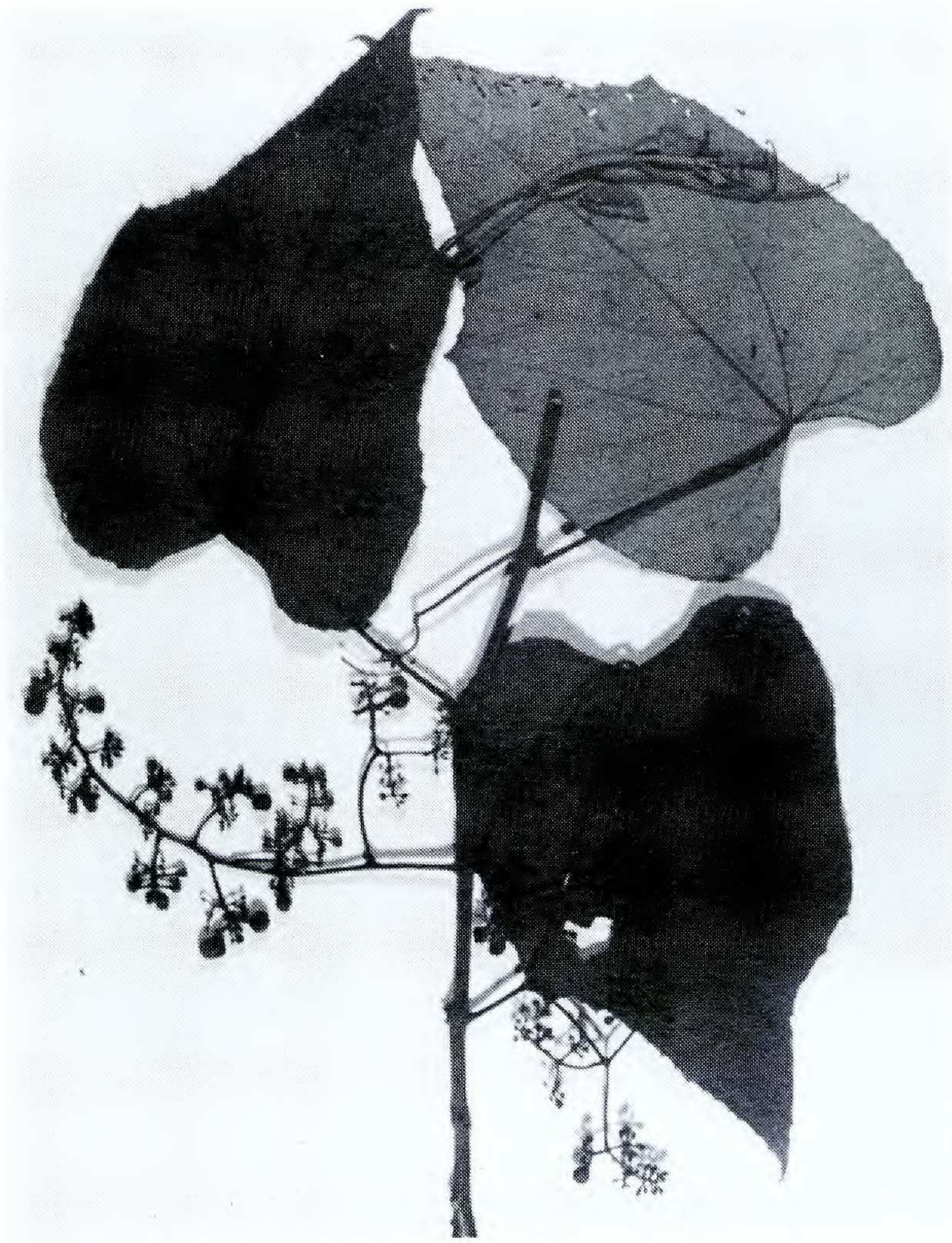

FIG. 1. Type specimen of *Vitis nesbittiana* (*Comeaux 4138*).

FIG. 2. *Vitis nesbittiana (Comeaux 4138).* a) habit, b) inflorescence with mature fruit, c) seed, dorsal surface (left) and ventral surface (right).

TABLE 1. Berry diameters and seed number for *Vitis nesbittiana*, *V. aestivalis* var. *argentifolia*, and var. *glauca*.

	Diameter in cm for 10 berries from each vine											
	Berries with 1 seed			Berries with 2 seeds			Berries with 3 seeds			Berries with 4 seeds		
SPECIES	×	RANGE	n	×	RANGE	n	×	RANGE	n	×	RANGE	n
1												
V. nesbittiana	1.0	0.7 – 1.2	15	1.1	1.0 – 1.2	8	1.2	1.0 – 1.5	5	1.4	1.4 – 1,4	2
2												
V. a. var. *glauca*	1.1	0.8 – 1.3	34	1.2	0.9 – 1.4	32	1.3	1.0 – 1.5	20	1.3	1.1 – 1.5	14
3												
V. a. var. *argentifolia*	0.8	0.6 – 1.1	50	1.0	0.7 – 1.2	43	1.0	0.8 – 1.3	52	1.1	0.9 – 1.5	44

× = mean, n = observations

1 = 3 vines sampled, 2 = 10 vines sampled, 3 = 19 vines sampled (1 berry with 5 seeds not included above)

TABLE 2. Seed characteristics in mm for *Vitis nesbittiana*, *V. aestivalis* var. *argentifolia*, and var. *glauca* (n = 10).

	Number of	Seed Length/Width		Seed Index[1]		Rostrum	
SPECIES	Samples	Mean	Range	Mean	Range	Mean	Range
V. nesbittiana	3	5.1/4.2	3.5 – 6.0/ 3.0 – 4.5	0.83	0.73 – 1.0	0.72	0.1 – 1.0
V. a. var. *glauca*	10	5.9/4.2	4.0 – 7.0/ 3.5 – 5.0	0.71	0.62 – 0.90	1.2	0.5 – 2.5
V. a. var. *argentifolia*	10	5.0/3.9	3.5 – 7.0/ 3.5 – 5.0	0.78	0.64 – 1.0	0.75	0.1 – 1.0

[1]Seed Index = seed width divided by length

Vitis nesbittiana is distinguished from *V. aestivalis* by fruit and seed characters (Tables 1 & 2). Fruit of *V. nesbittiana* are generally larger than *V. aestivalis* var. *argentifolia* and similar in size to *V. aestivalis* var *glauca*. Conversely, seeds of *V. nesbittiana* and *V. aestivalis* var. *argentifolia* have similar sizes, whereas seed of *V. aestivalis* var. *glauca* are larger. Seeds of *V. nesbittiana* are unique among subgenus *Vitis* in North America in normally having 2 – 6 shallow grooves on the dorsal surface arranged perpendicular to the vertical axis.

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Beltsville Symposium XIII

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May 9 – 11, 1988

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NOMENCLATURAL CLARIFICATION OF THE NAME *VITIS SIMPSONII* MUNSON (VITACEAE)[1]

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ABSTRACT

The name *Vitis simpsonii* Munson has been applied by Munson and other authors to two different taxa. This has resulted in nomenclatural confusion in attempts to characterize and classify these taxa. *Vitis simpsonii* Munson of 1887 is treated in synonomy under *Vitis cinerea* Engelm. ex Millard. var. *floridana* Munson of series *Cinerascentes*. *Vitis simpsonii* Munson of 1890 is synonomized under *Vitis aestivalis* Michaux var. *smalliana* (Bailey) Comeaux of series *Aestivales*.

INTRODUCTION

The name *Vitis simpsonii* Munson historically has been applied in the literature to two distinct taxa found in the southeastern United States. Munson had been sent grapes from Florida by J. H. Simpson on different dates. Munson (1887) named one *Vitis simpsonii* in honor of J. H. Simpson. However, Munson (1890) reduced this taxon to varietal rank under *V. cinerea*. To retain an honor to Simpson, he then named a second grape *Vitis simpsonii* (Munson, 1890). Therefore, Munson described two distinct grape taxa with the same name. Taxonomists historically have been confused on the application of the name *Vitis simpsonii* as a result.

The nomenclatural confusion is compounded by a third grape sent by Simpson and originally labeled questionably as *Vitis caribaea* DC. These grapes will be listed as taxa numbers one to three in this paper to guide the reader through the complicated nomenclatural history.

NOMENCLATURAL HISTORY

Table 1 provides an overview of the major taxonomic publications relating to the taxa involved. Munson (1887) published a listing of native

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